Broadview Infiltration Reduction Pilot Project

October 19, 2011

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Broadview Neighborhood

- Residential, with houses built in 50's and 60's
- Experience sewer backups during storm events
- SPU has a project designed to improve service in this area and reduce the potential of backups into peoples' homes

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What *is* the Infiltration Reduction Pilot?

- Designed to reduce excess flows (storm influenced) to the sewers
- If successful, this should provide additional capacity, and reduce overflows
- Uses a technique called “flood grouting”

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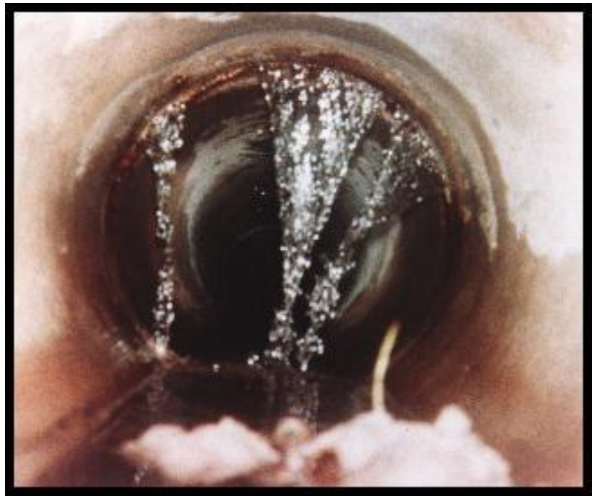
What is “Infiltration”?



Examples of infiltration in sewer pipes

Excess water that enters the sewer pipes through cracks, and other holes that can lead to overflows during heavy winter storms.

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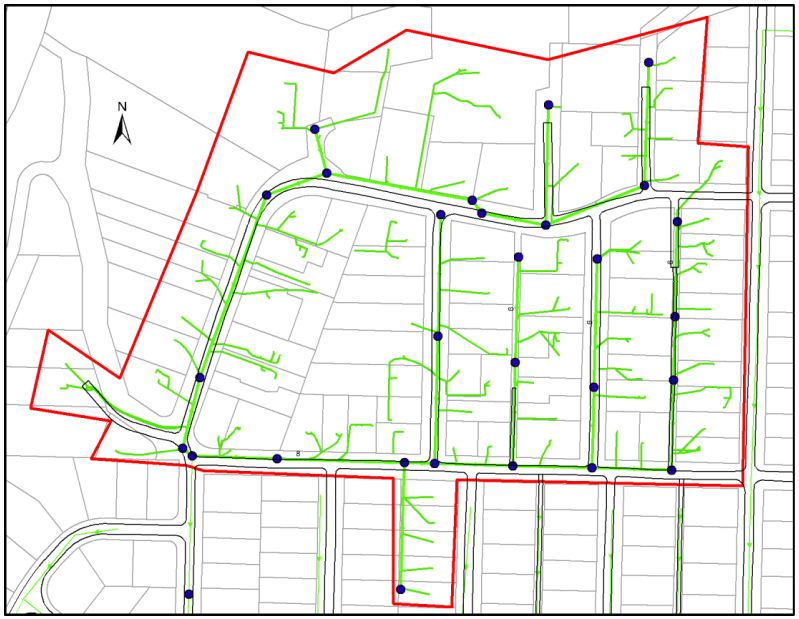
Where Did We Do the Pilot?



- Most “upstream” basin for 12th Avenue sewer line
- This area has significant infiltration that adds to flows downstream
- Large enough to accurately measure flow
- Good metering location

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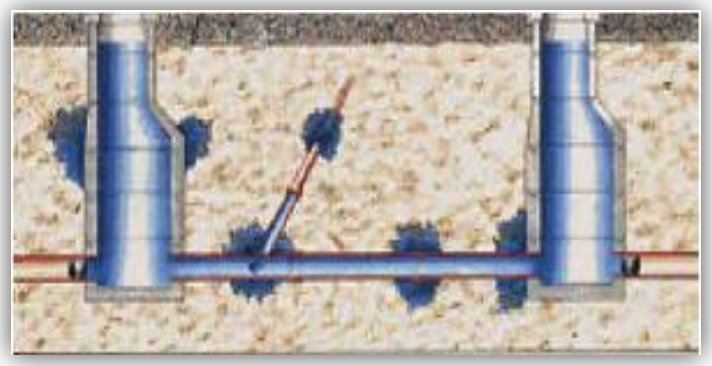
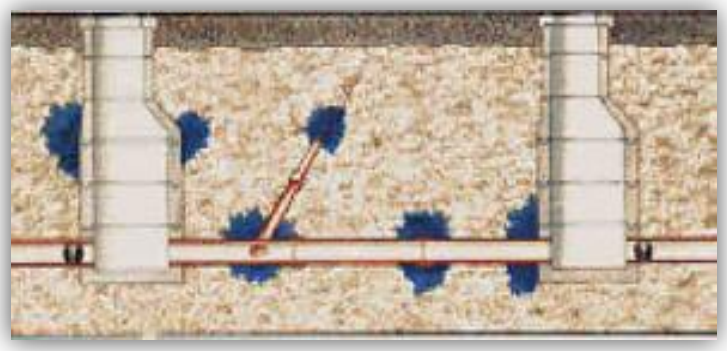
How Does Flood Grouting Work?



- After inspection and cleaning, the section to be treated is first plugged with inflatable plugs. Sewer, laterals and manholes are filled with solution S1 which penetrates through defects into the surrounding ground.



- When optimum penetration has been achieved Solution S1 is rapidly pumped out, leaving defect zones saturated.

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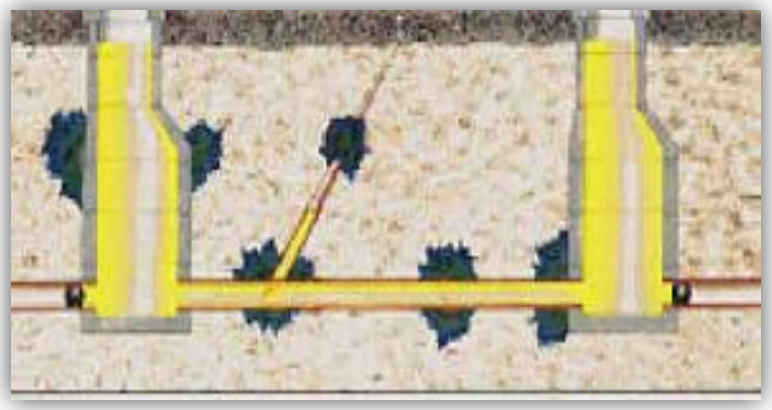
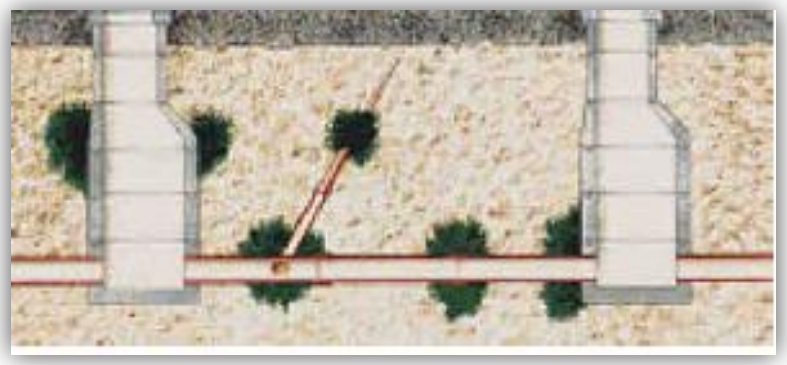
How Does Flood Grouting Work?



- The section is immediately refilled with solution S2 which reacts with S1 in the ground. This starts to form a concrete-like matrix, binding the soil particles and sealing all leaks with solidified ground around the defects.



- When the reaction is complete and the water-tightness established, Solution S2 is pumped out.
  After flushing , the sewer is returned to service.The pipe´s structure protected from further deterioration.

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How Does Flood Grouting Work?

Excavated trench after sealing the pipe

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Broadview Sequence of Work

- Right of entry
  - Community meetings
  - Mailings
- CCTV inspection (mainline and side sewer)
- Repairs if needed

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Broadview Sequence of Work

- Clean out installation
- Clean water testing
- Sanipor application

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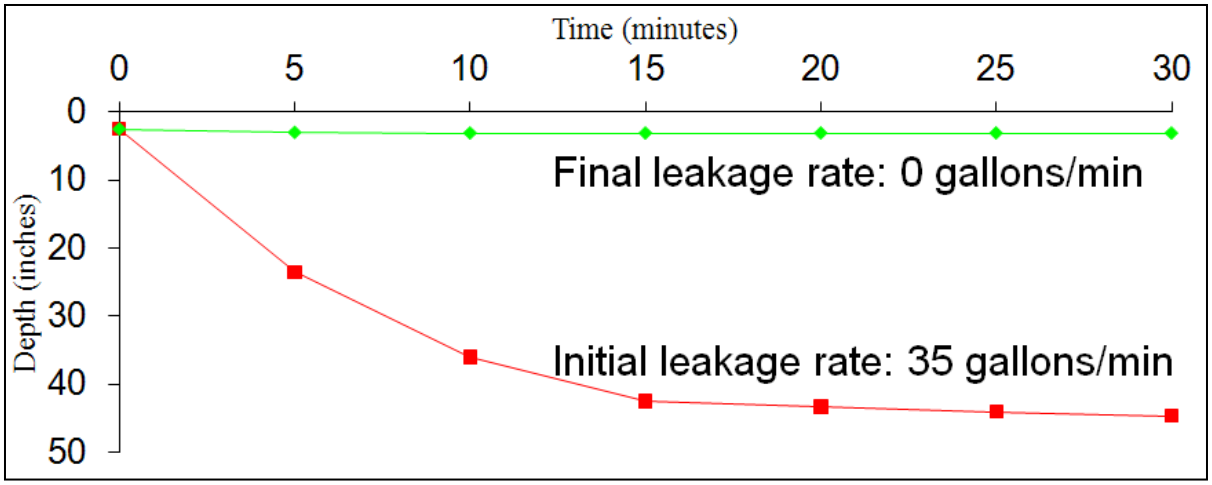
Initial Observations

Promising improvements on reducing leakage



Example Pipe Segment Where Flood Grouting Was Done

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Initial Observations

- Cost is lower than other approaches
- Other utilities are also interested in this approach
- Community has generally been supportive

However -

- Side sewers are complex, especially in Broadview. The contractor has had some problems with identifying side sewer locations and in ensuring tightness of lateral plugs which has caused backups in three houses.

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Project Status Summary

- Grouting is complete for pilot area
- Current project cost is approximately $1.1M
- Continued flow monitoring through spring of 2012
- Will model to determine removal rates
- Need to resolve issues with application in side sewers
- May use this technology in other areas if effective and application issues resolved
- Cost appears to be about one third of the cost of pipe bursting.

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